

Appl. No. 10/711,489
Response dated November 2, 2005

REMARKS

Claims 1 and 6 are amended, claim 2 is cancelled, and new claim 33 is presented. Claims 1, 3-21, 23-26 and 33 are pending in the application. Claims 1, 3, 23 and 24 stand rejected as anticipated by *de Baan et al.*; claims 1-6, 8, 23 and 24 stand rejected as anticipated by *Shatto, Jr.*; claims 7 and 9-14 stand rejected as obvious in view of *Shatto, Jr.* and *Maloberti et al.*; and claims 15-21 stand rejected as obvious in view of *Shatto, Jr.* and *Wittgenstein*. Claims 22 and 27-32 stand withdrawn as being directed to a nonelected species. The Office Action indicates that claims 25 and 26 are allowed. Further examination of the application, as amended, and reconsideration of the rejections are respectfully requested.

The amended claims are supported in various aspects of the specification and no new matter is added. Amended claim 1 recites the features of original claim 2, now canceled. Support for "on a subsea floor" (claim 1) is found inter alia at paragraph [0032].

Election/Restriction

The Office Action alleges that claim 22 is not readable on the elected Species A (Figures 3A-3H), but is instead directed to Species B (Figures 4A-4D). Claim 22 states "the apparatus of claim 1 wherein said concentrated buoyancy device is installed separately from said first pipeline section and

Appl. No. 10/711,489
Response dated November 2, 2005

said second pipeline section.” Figures 3A-3H illustrate such a method for installing a concentrated buoyancy device *separately* from the first and second pipeline sections, and does not exclude then attaching respective (unbuoyed) ends of the pipeline sections at the buoy. Rather, Figures 4A-4D illustrate the alternate species B wherein a *buoy* is previously connected to a respective pipeline end, as recited in claims 23 and 24, and the ends can then be connected or drawn together, e.g. with the device of Figures 5A and 5B.

Paragraph [0039] states “buoyancy device 202 is attached to tethers 208A and 208B at ocean surface 222.” The buoyancy device is thus connected by the tethers to the pilings 206A, 206B. One skilled in the art would consider the buoyancy device to be installed since the buoyancy device is tethered. Paragraph [0039] further supports this by stating “once buoyancy device 202 reaches desired depth, buoyancy device 202 can then be de-ballasted to attain full desired buoyancy.” One would not de-ballast the device unless the buoyancy device was tethered in an installed position at a desired depth because the de-ballasting could force an untethered device to change depth. Thus, the buoyancy device is considered installed in Figure 3B. At the end of the installation phase as shown in Figure 3B, neither pipeline is attached at that point. In fact, the first pipeline section is not installed to the buoy until Figure 3D. See paragraph [0041]. Thus Figures

Appl. No. 10/711,489
Response dated November 2, 2005

3A-3H illustrate the buoyancy device installed separately from the first and second pipeline sections as recited in claim 22. Applicant respectfully traverses the withdrawal of claim 22 from consideration as claim 22 is specifically directed to and does not exclude Species A.

Moreover, since the examiner has already examined the unelected species as represented in claims 23 and 24, it can hardly be argued that an undue burden would be imposed by examining the remaining claims directed to Species B. In any case, at least claims 23 and 24 should no longer be subject to the election of species requirement since they have already been examined once.

Applicant further requests withdrawal of the election/restriction requirement and rejoinder of the claims withdrawn from consideration since a generic/linking method claim is presented in new dependent claim 33. This claim recites installing the topographic-feature-traversing pipeline apparatus of claim 1 and transporting fluid through the pipeline across the traversed feature. Claim 33 is thus linked to the independent apparatus claim 1 and is generic to both species A and B, reading on both claims 25 and 27.

By way of background, applicant's invention provides a method and apparatus to traverse a subsea topographic feature with a subsea pipeline

Appl. No. 10/711,489
Response dated November 2, 2005

including at least one concentrated buoyancy device by which the pipeline is connected and elevated.

The reference *de Baan et al.* discloses an offshore tanker loading system, and thus does not teach or suggest "a pipeline constructed to carry fluids... across a topographic feature selected from the group consisting of subsea basins, domes, valleys, cliffs, canyons, and escarpments."

First, there is no reference in *de Baan et al.* to any topographic feature. In fact, Figures 1-4B show only a flat sea floor, not a basin as erroneously alleged in the Office Action. At column 2/line 15-16 *de Baan et al.* states the invention provides a *flexible loading system* which provides fluid communication *between a subsea pipeline and a surface vessel*.

Applicant's claim is not merely a different intended use. Applicant specifically claims a different structure to provide fluid communication *across* a topographic feature. Namely, the pipeline materials and design include a concentrated buoyancy device and are sufficient to span a topographic feature. At best, *de Baan et al.* would only suggest unloading a terminal end of the pipeline onto the surface vessel which could in hindsight be positioned over an undisclosed topographical feature. The elements of a topographic feature and fluid communication across the feature are not met.

Appl. No. 10/711,489
Response dated November 2, 2005

Second, *de Baan et al.* does not disclose a pipeline including a buoyancy device, instead suggesting at 2/16-18 "a hose extending from the subsea pipeline to a first buoyancy tank." The terminally disposed tanker supply hoses used in *de Baan et al.* to connect to a floating tanker vessel cannot be said to be a subsea pipeline. At 3/50-52 *de Baan et al.* states the loading system "includes a pair of subsea pipelines...which terminate in pipeline end manifolds." The termination of the pipeline indicates that the hose itself is not a pipeline. It also states at 4/5-7 "pickup line 42...has sufficient buoyancy to keep it floating on the surface." Thus, there is not a subsea pipeline including at least one *concentrated* buoyancy device in *de Baan et al.* Additionally, although there is a separate pipeline disclosed in the figures of *de Baan et al.*, each figure teaches a non-buoyed pipeline (12,14 in Figure 1) disposed directly on the sea floor, contrary to applicant's claim 1 of a pipeline constructed to carry fluids across a topographic feature with a buoyancy device. This distinction is further emphasized in applicant's claim 1 which recites that the first and second pipeline sections extend from locations on the seabed floor.

De Baan et al. teaches use with a tanker, whereas Applicant's claims exclude using a tanker in the manner taught by *de Baan et al.* For example, the Office Action appears to have overlooked Applicant's disclosure at

Appl. No. 10/711,489
Response dated November 2, 2005

paragraph [0006] which notes that “pipelines are generally considered lower risk than tankers because there is significantly less risk of maritime collisions and there are fewer exchanges (platform to tanker; tanker to shore facility) of the hydrocarbons.” Transport via tanker over the topographic feature would thus not meet the recitation of local pipeline transport across the feature, and instead appears to be directly contrary to applicant’s claimed invention.

De Baan et al. Figures 7A-7B further teach moving separate fluids up a hose and into a tanker and thus directly away from use of the *de Baan et al.* system as a pipeline; see 5/9-26 stating a “multiple passage fluid connection is then to be provided to allow the flow to remain separate until on board the tanker.” Similarly, the loading system of *de Baan et al.* teaches use with pipeline end manifolds, indicating the tanker supply hoses may not be suitable for use as a pipeline and/or suitable for suspension above the seabed. The claimed topographic-feature-traversing-pipeline invention would not have been obvious in view of an offshore tanker loading system. Accordingly, withdrawal of the rejection in view of *de Baan et al.* is respectfully requested.

Similarly, *Shatto, Jr.* discloses an apparatus for anchoring underwater vessels, wherein the vessel is a receptacle for produced fluid, and thus also

Appl. No. 10/711,489
Response dated November 2, 2005

fails to teach or suggest a subsea pipeline constructed to carry fluids across a topographic feature as recited in claim 1. Like *de Baan et al.*, *Shatto, Jr.* does not disclose traversing a topographic feature, and there is no mention that fluids would be carried *across* the undisclosed topographic feature. *Shatto, Jr.* states at 2/27-31 that “extending downwardly from the vessel are a plurality of flexible flow lines... which run *along* the ocean floor to a distant location. For example, at least one flow line would connect each under water well.” *Shatto, Jr.* teaches connecting a plurality of wells to a buoyant production vessel with flexible flow lines disposed *on* the seabed, not a subsea pipeline that traverses a topographic feature; thus *Shatto, Jr.* fails to bridge the gap from *de Baan et al.* Furthermore, Applicant’s invention is not directed to flexible flow lines as disclosed in *Shatto, Jr.*, but can include a “rigid” steel pipeline section, for example. Flexible flow lines may not be suitable for use as a pipeline and/or suitable for suspension above the seabed.

Nor would it have been obvious to use *Shatto, Jr.* as a pipeline for traversing a topographic feature. *Shatto, Jr.* only discloses lines running directly along the ocean floor, which is one of the problems that applicant’s invention seeks to avoid. See paragraph [0003] of the specification. In contrast, Figure 1 in *Shatto, Jr.* discloses lines that hang straight down,

Appl. No. 10/711,489
Response dated November 2, 2005

which, if the storage/unloading vessel of *Shatto, Jr.* were positioned over a topographic feature as the office action appears to suggest (despite the fact that there is no motivation or guidance for doing so anywhere in *Shatto, Jr.*), the lines would be disposed directly on or in that topographic feature. As stated above, Applicant's invention can allow the lines to be suspended above for traversing the topographic feature to avoid stresses resulting from contact with the topographic feature. Accordingly, withdrawal of the rejection in view of *Shatto, Jr.* is respectfully requested.

Maloberti et al. discloses holding a hose taut between a vessel and a seabed, but similarly does not disclose or suggest a pipeline traversing a topographic feature, and thus also fails to fill the gap from *de Baan et al.* and/or *Shatto, Jr.* to applicant's invention.

Maloberti et al. teaches a system for transporting fluid from the subsea floor to the sea surface using a curved hose. The curved hose of *Maloberti et al.* is directly contrary to the anchoring system of *Shatto, Jr.*, which uses a vessel brought to the surface. This may require a large amount of extra hose that hangs below the vessel when submerged. However, *Maloberti et al.* at 1/62-66 states that a configuration that "increases the length of hose necessary between the wellhead and the surface support and especially exhibits a considerable bulk at the level of the subsea floor that

Appl. No. 10/711,489
Response dated November 2, 2005

can lead to inextricable problems in the case of a large number of hoses or of bundles of hoses" is undesirable.

Neither *Shatto, Jr.* nor *Maloberti et al.* discloses a suction piling as in Applicant's claim 7. *Maloberti et al.* only mentions a deadman (1/62), which is not necessarily a suction piling. Neither *Shatto, Jr.* nor *Maloberti et al.* discloses a flex joint as in Applicant's claim 10. The Office Action alleges that elements 8 and 11 of *Maloberti et al.* are flex joints, but these are actually anchoring guys or tie rods. See 3/68 and 4/16. Neither *Shatto, Jr.* nor *Maloberti et al.* disclose a stress joint as in Applicant's claim 11. Neither *Shatto, Jr.* nor *Maloberti et al.* disclose a swivel flexural control device as in Applicant's claim 12. The Office Action alleges that element 9 of *Maloberti et al.* is a swivel, however element 9 is a tie rod fastening point. See 4/1-3. It would not be have been obvious to employ a flex joint, stress joint, or swivel from *Maloberti et al.* because it discloses specific structure to curve a hose upward, and does not mention any of those devices.

Wittgenstein similarly fails to fill the gap from *de Baan et al.*, *Shatto, Jr.* and/or *Maloberti et al.*, to applicant's invention of claims 15-21. Moreover, *Wittgenstein* teaches the use of multiple anchor weights, ballast weights to sink the positive buoyancy pipeline (2/65-66), and pulleys to install the pipeline. See Figure 1. Applicant's invention of claims 15-21

Appl. No. 10/711,489
Response dated November 2, 2005

does not claim the use of ballast or anchor weights. Applicant's invention can use a subsea anchor piling, but these are not the same as ballast weights, which are generally temporarily attached to a buoyant structure to facilitate installation. A piling is driven into the ground, but *Wittgenstein* at 3/5-11 discloses merely lowering an anchor or a ballast weight from a barge to the ocean floor. One skilled in the art would not equate an anchor or ballast weight to a piling. *Wittgenstein* further discloses that pipeline installation requires multiple barges with winches and ballast and anchor weights. See *Wittgenstein* at 3/5-36. *Wittgenstein* is the complicated pipeline suspension system that Applicant is trying to avoid.

Additionally, *Wittgenstein* teaches the use of a "positive buoyancy pipeline." This is not a concentrated buoyancy device as claimed by the Applicant because the buoyancy in *Wittgenstein* is spread out over the entire length of the pipeline. *Wittgenstein* specifically teaches that the entire length of the pipeline must be buoyant, directly contrary to applicant's claims to a concentrated buoyancy device. This is more costly and complicated than Applicant's invention. *Wittgenstein* further teaches away from applicant's invention in that it is desirable to keep the pipe relatively straight, stating at 1/47-48 that multiple attachment points are for "avoiding excessive curvatures over this length" as shown in the figures; this would not allow the

Appl. No. 10/711,489
Response dated November 2, 2005

pipeline to extend from a first location on the subsea floor, curve around or over a topographic feature, and extend to a second location on the subsea floor as required in Applicant's invention. It would not have been obvious to combine the oil storage vessel of *Shatto, Jr.* and the pulley and weight system of *Wittgenstein* to obtain Applicant's invention. Dependent claims are allowable for at least the same reasons.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. If any issues remain that are appropriate for resolution by telephone interview, please contact undersigned counsel.

Respectfully submitted,



Daniel N. Lundeen
Reg. No. 31,177
Lundeen & Dickinson, L.L.P.
P.O. Box 131144
Houston, Texas 77219-1144
(713) 652-2555
(713) 652-2556 Fax
ATTORNEY FOR APPLICANT